Key drivers for LTE success: Services Evolution

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Outline

- Overall 3GPP work areas
- IMS – the service platform for operators
  - Multimedia Telephony (MMTel)
- Policy Control evolution (PCC)
- Access discovery and selection (ANDSF)
- Machine Type Communications (MTC)
- Device-to-device communication (D2D)
- Regulatory features (disaster warning, emergency calls, priority service)
  - Public Warning System (PWS)
  - Priority Services

Overall 3GPP work areas

IMS and its evolution (1/2)

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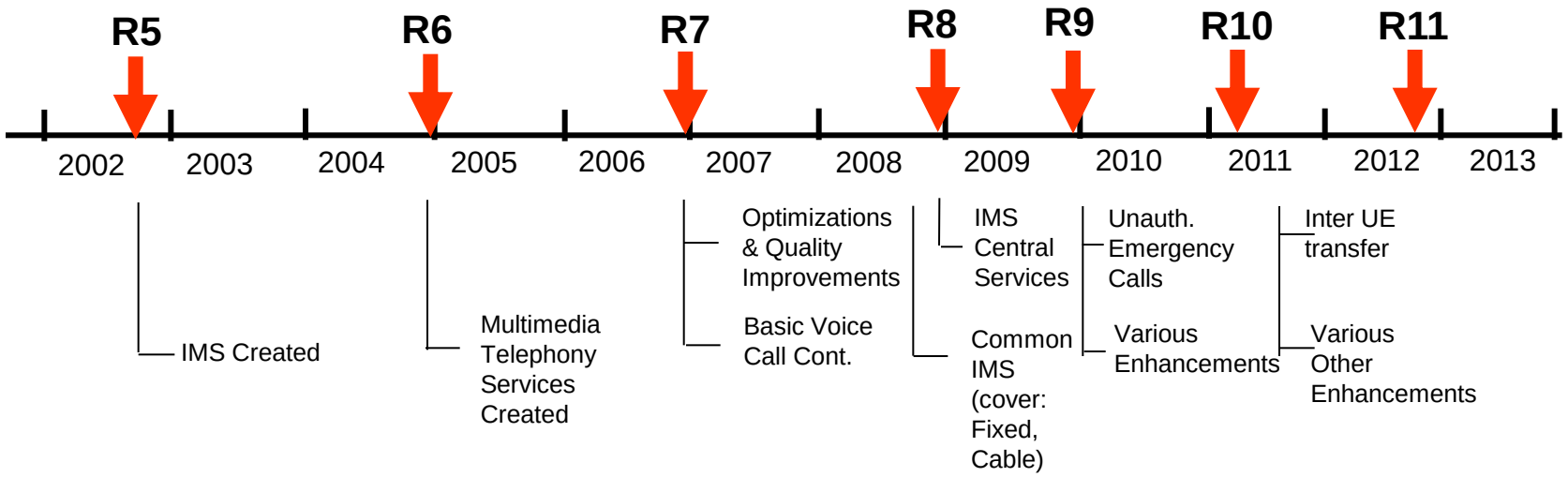
Basic IP Multimedia standards have been available since 2003

- Gradual addition of functions has created a carrier grade service platform



IMS and its evolution (2/2)

- Work still ongoing on operational-related aspects
  - Jointly with the GSM Association on aspects of interconnect, roaming and charging
  - Local Breakout is utilized for connecting IMS media
    - Optimized media path is important to reduce cost
  - Legacy Charging Accounting and Interconnect principles should be re-used
- Location requirements being addressed
  - Authorities in many countries require network-authenticated location information stored for certain sessions (e.g. for court cases)
  - Standards are being developped to address this

SMS and Messaging over LTE

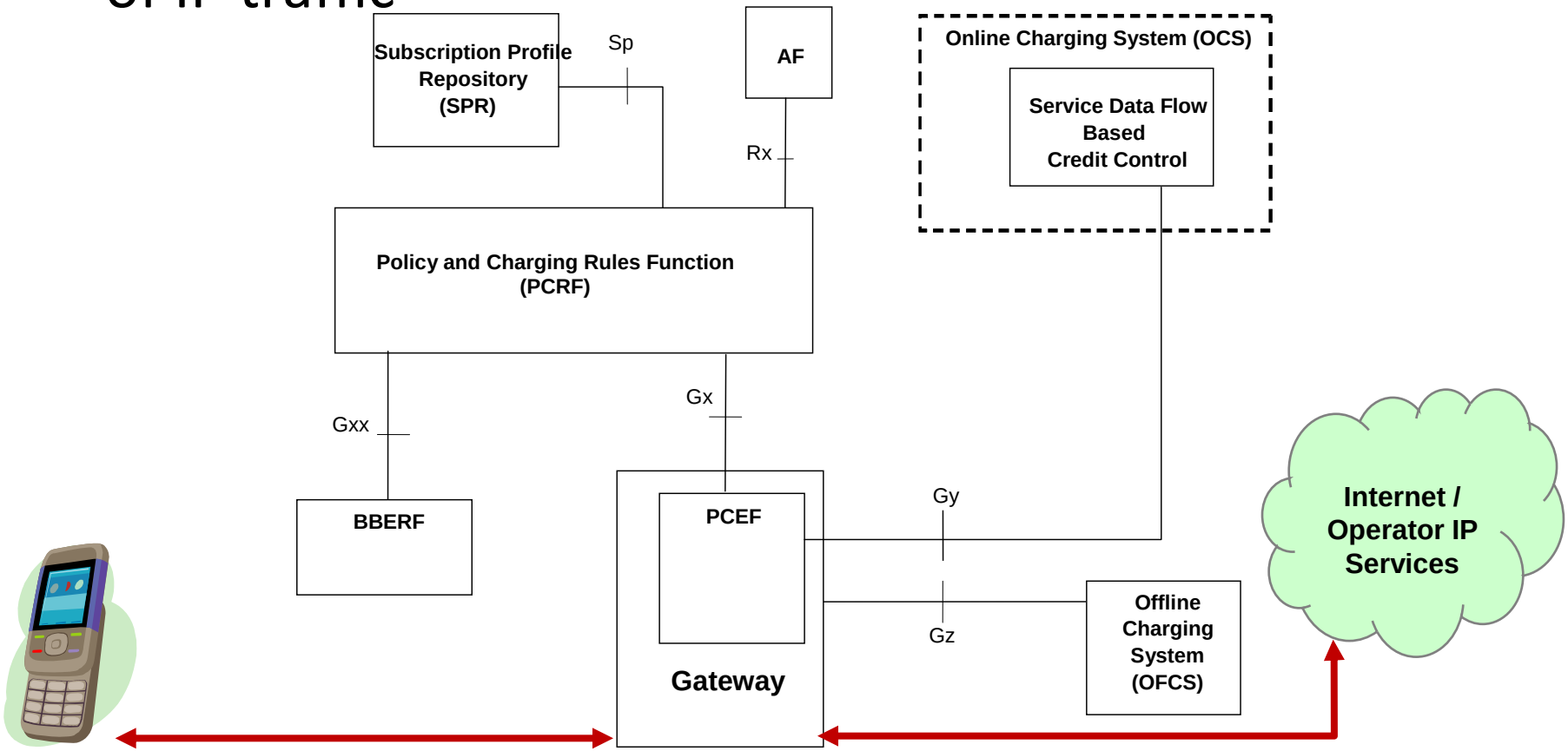
- LTE is packet only and hence does not natively support legacy SMS
- IMS based messaging may not be available at initial LTE deployments

→Standards were developed to deliver legacy SMS over LTE

- A device that is attached both to LTE and 2G/3G can send and receive legacy SMS over the legacy CS core network
- Enhancements to the necessary interfaces were defined to pass SMS between legacy CS core and EPC/LTE

Policy Control (PCC)

- The PCC framework allows QoS and Charging control of IP traffic



PCC evolution

- The PCC framework has been further enhanced to give operators an even wider range of control tools
- Support for sponsored data connectivity has been added
- Service awareness, deeper lookup of packets is also supported
- Handling of privacy policies has been standardized

Access Discovery and Selection (ANDSF)

- EPC is a multi-access IP core system supporting both native 3GPP cellular radio technologies and other IP access systems (802.x, etc…)
- Legacy selection mechanisms have been available to choose a 3GPP cellular radio and PLMN
- Additional standards were developed to take into account non-3GPP access technologies
  - Access technology policies are uploaded to the device using Device Management procedures
- Further work ongoing to fine-tune the granularity of the policies

Machine Type Communications (MTC)

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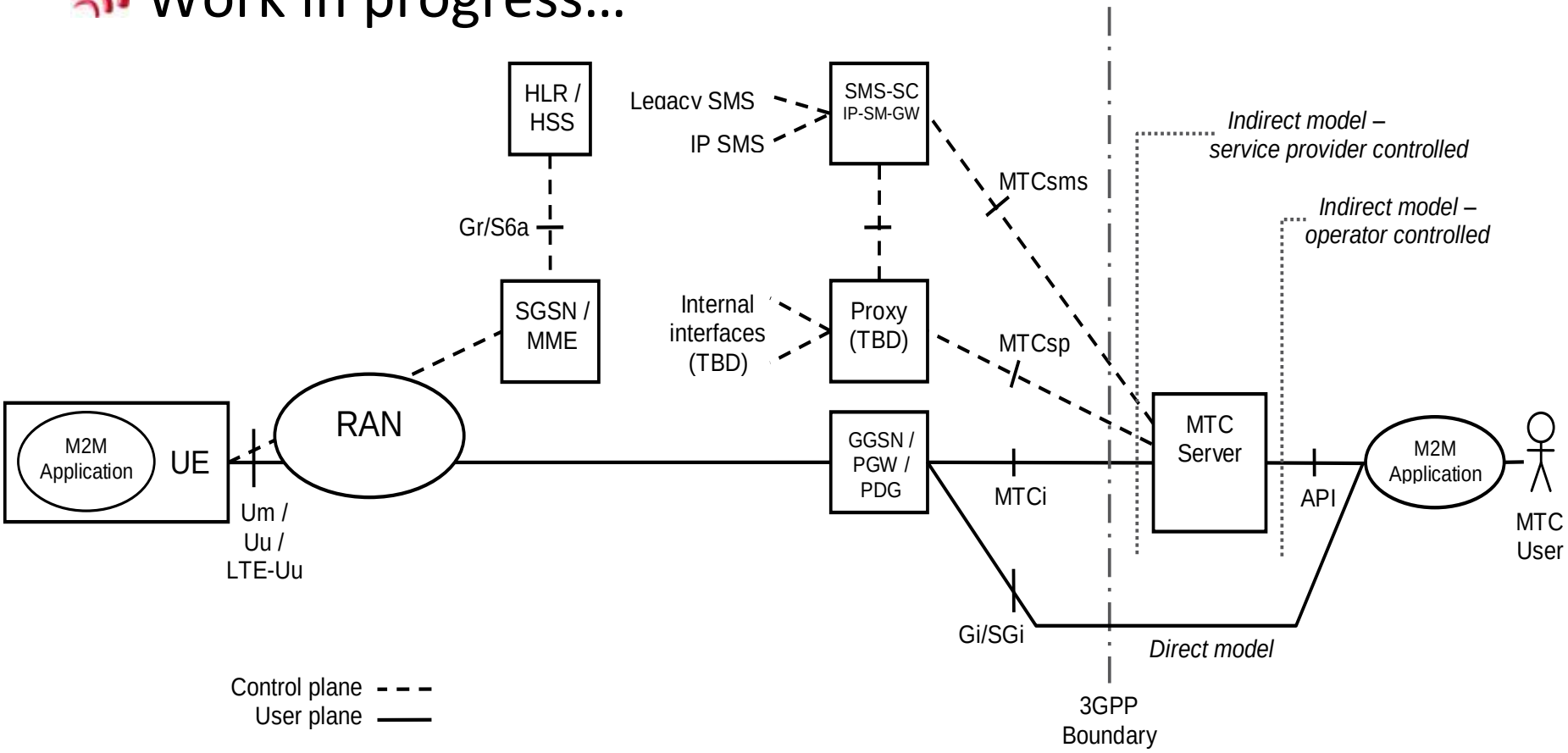
- M2M is recognized as a key segment in future packet networks

- Initial 3GPP efforts have focused on the ability to differentiate machine-type devices
  - This allows the operator to selectively handle such devices in overload situations
    - Low priority indicator has been added to the relevant UE-network procedures
    - Overload and Congestion control is done on both core network and radio access network based on this indicator

MTC – basic architecture

Work in progress…



Evolution of MTC

- Further functionality being added to 3GPP standards in the following areas
  - Reachability Aspects, MTC Feature control, Device Triggering
  - Addressing, Identifiers - especially removal of MSISDN dependencies in the architecture
  - Signaling Optimizations
  - Small Data Transmissions
  - MTC Monitoring
  - ….
- MTC is a substantial technical area, full completion will span across multiple future Releases

Device-to-device Communication (D2D)

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- Proximity-based applications and services represent a recent and enormous social-technological trend
  - These applications and these services are based on the awareness that two devices or two users are close to each other
  - Awareness of proximity carries value, and generates demand for an exchange of traffic between them
- Direct D2D communication is also essential for public safety services
  - e.g. in case of lack of network infrastructure in disaster situations)
- 3GPP has initated work on enhancing the LTE-EPC platform to support these capabilities

Regulatory features – disaster response

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- Recent events have brought the different disaster response functions of the 3G/4G networks to the forefront

  - Public Warning System (PWS) provides a secure framework for delivering Warning Messages to the devices
    - The Japanese version of this system saved thousands of lives in the recent earthquake/tsunami disaster
  - Priority Services
    - Mechanisms have been standardized to allow priority access to the network services (voice calls, Internet, multimedia calls, etc…) for e.g. government officials in the event of a mass disaster

Thank You

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